

Stash the Trash

Target Level:
Grade 5

SOLs:
Science: 5.6

Materials Needed:

Role cards

A collection of possible clean picnic litter items (e.g., six-pack ring-yokes, can flip-tops, candy bar wrappers, sandwich bags, paper napkins, plastic grocery bags, polystyrene cups)

Place markers to designate a starting line and a home base (e.g., piece of rope or stick, brown paper bag, etc.)

Several strips of red cloth

Note: a large, cleared playing area will be needed

Time Needed:
One class period

Summary

Students will play an interactive group game that simulates impacts of litter pollution on a sampling of marine wildlife.

Objectives

Students will be able to understand one way that litter items may become a part of the marine environment, describe examples of litter pollution impacts, and discuss additional challenges that may face those wishing to help.

Background

The presence of litter and other debris in an aquatic environment affect not only the water quality, but also the plants and animals that live in that environment. This kind of litter, known as “marine debris,” is trash found in the ocean and bay or along its shores. The source can be classified as either “ocean-based” or “land-based” litter depending upon where it enters the water. Ocean-based debris is wastes discarded by ships -- merchant, military, research and commercial fishing vessels, offshore oil platforms, and recreational vessels. Land-based debris blows or washes into the water from uses such as recreational beach visitors, solid waste disposal activities, inadequate sewage treatment operations, and illegal dumping.

Marine debris creates ugly beaches, reduce tourism, adds to taxes for clean up, and poses a threat to humans and wildlife. Yet, it is the easiest form of aquatic pollution that we, as individuals, can eliminate or at least reduce. First we can reduce the amount of trash that is generated. People often use disposable products because they are convenient. By choosing to purchase more reusable products instead, we would greatly reduce the amount of waste generated, thereby reducing the number of waste items that might then become litter.

Another method of reducing aquatic debris is to use the appropriate disposal practices. Disposing trash in tightly covered containers will likely keep it from becoming litter and possibly harming the local wildlife. But there are also additional challenges to consider. Many recreational areas do not even offer refuse bins for disposal, and even fewer will have recycle bins available. The places that do have refuse containers often find that by the end of a day they are full to overflowing. Also, people will often leave their waste tied in a plastic bag next to the overflowing refuse container. Animals will find the bags and tear them open and some of the waste has become litter.

Advance Preparation

Transfer the listed roles onto index-type cards. Note that multiple copies will be needed of the ‘litter item’ card. Suggestion: These may be laminated for durability and multiple usage.

Procedure

1. Tell the students they will participate in a role-playing game and take them to the clear area. Explain to the group that two teenagers are going to the beach for a day of surfing. They have loaded their supplies and are ready for a day of fun. Note that all students will participate by playing a role. They will be one of the two teenagers, an item they take to the beach, or a marine animal who gets hurt by one of their items. Lay the starting line and place a marker about 100 feet away to designate the home

base.

2. Have the students draw the card of the role they will play. Ask John and Jane to share their 'stories' with the rest of the class. Position them behind the starting line with their container of litter items. Have each of the sea creatures tell a little about their new identities, but they should not reveal which of the litter items they may either eat or become entangled with. Station the sea creatures between the starting line and the home base. Determine that the rest of the class are items of litter that John and Jane have left behind. Give each a red armband and have John and Jane trade their litter card identity for one of the items from their container.

3. Explain the rules of the game. The pieces of litter will not know which marine animal may try to eat them or become entangled in them as they try to quickly make their way to home base. If a piece of litter is tagged, it should freeze in place. The sea creatures may "catch" more than one piece of litter if they can. The first round of the game will end when all of the litter items have either been tagged or reach home base. The marine animals will need to give a brief explanation of how the litter they caught will impact their life. The litter items they have caught should help in the development of the animal's creative verbal or visual telling of its story. Any litter items not caught will get to share a creative version of their anticipated impact on the environment (i.e., what do they expect to be doing for the next few years of their life?).

4. Instruct the pieces of litter to start from behind the line and head toward home base. After all movement has stopped, give the students a couple of minutes to develop their expected outcomes. Have the animals and the pieces of litter that were not caught share their brief stories with the rest of their class. Discuss how many years they think some pieces of litter may be around - 10, 20, maybe 100 years or more! Include questions such as asking where the pieces of litter may be for such a length of time (e.g., floating in the water, stuck on other floating debris, on this beach or another beach somewhere?). How might a storm affect the placement or deposition of litter? Might the litter also travel quite long distances?

5. Help students summarize the detrimental impact this litter has had on these species of marine wildlife.

WrapUp/Assessment

Have the students return to their seats or sit in a circle. Ask John and Jane for a couple of suggestions of things they might do differently when visiting the beach again. Using their suggestions, illicit group discussion of how people might prevent litter from ending up in the water and endangering the wildlife. Guide the discussion to include alternatives to reduce the amount of trash generated in addition to ones that include use of appropriate disposal practices. Assist the class in determining a possible solution to John's and Jane's disposal problem. (In all honesty, they will probably have to carry their refuse all the way home with them to properly dispose of it.)

Extension

Have the students research an additional marine animal of their choice and develop an environmental impact statement. The written report should provide a brief paragraph of basic background information relating to their species' particular environment and needs. It should also include a second paragraph describing a litter item that could likely be found in its environment, and the possible impact to its kind.

John Doe

A teenager and Jane's brother

You are a surfer and go to the beach as often as possible. Your friends will often go too. You usually travel back and forth in the new car you received after graduating from high school. You and your friends always bring food and drinks. After a great day, you all pack up to go home. You want to keep your new car looking really nice and clean, and there aren't any trash containers nearby. You usually leave your litter laying on the beach.

Jane Doe

A teenager and John's sister

You are just learning how to surf and love to go to the beach as often as your brother will let you come along. You always bring food and drinks for the day and it is your job to be sure everything is in the cooler that should be. After a great day, you help pack up to go home. You know John doesn't like a mess in his new car, and there aren't any trash containers nearby. You usually leave your litter laying on the beach.

A Piece of Litter

Ted Turtle

Background to share:

Sea turtles have evolved a streamlined shell (carapace), strong flippers, and salt-excreting glands in adaptation to their marine environment. Most live in tropical waters. They primarily feed on jellyfish. Female sea turtles come onto beaches and lay their eggs in holes that they dig and then cover. The young hatch in 5 to 10 weeks, and generally do not exceed 2 inches in length.

Suggestion for beginning of a story:

You hatch and climb up out of the sand. You crawl as fast as your little legs will carry you toward the water. The waves have washed over the litter on the beach, making quite a mess for you to get through. You might become entangled in something (plastic 6-pack ring?) and drag it along with you; it won't come off. You'd like to get to the water - but then could you even swim? You are hungry and wonder what the bubbly things are that are floating and rocking in the water... maybe jellyfish? (Sea turtles often mistake plastic bags for jellyfish and eat them, resulting in severe distress and often death...)

Hooty Blowfish

Background to share: Puffers, also called blowfish, globefish, or swellfish, are more than 100 species of fish with the ability to inflate their stomachs with water or air to about twice their size. Their jaw teeth are fused into a small, hard, cutting beak useful for grasping and crushing hard-shelled prey. The fused teeth in both jaws are separated by a space, giving the puffer the appearance of having four large teeth. Most live in tropical waters. The northern puffer, found from Florida to Cape Cod, grows to about 14 inches long.

Suggestion for beginning of a story:

You swim through the fast moving water. The waves have washed over the litter John and Jane left on the beach and have been breaking it up and pulling the pieces out farther and farther into the water. It appears there is a feast of tasty bugs on the surface above you, just waiting to be captured! How hungry are you?...

Gibson Gull

Background to share:

Gulls are found in largest numbers along the coastal shores. They are primarily scavengers and prey on anything they can find. A first choice of food might be dead animal matter or fish caught in shallow waters. Some gulls are known to carry hard-shelled mollusks aloft and drop them on hard pavements or rocks to break the shells. Others are seen in garbage dumps. They have a stout, hooked bill and their feet are fully webbed except for a free hind-toe.

Suggestion for beginning of a story:

You spot the debris left by John and Jane. You decide you might be hungry and head for a crust of bread. You think "Oooh-eeeeee! Look at all the choices!" The shiny metal flip tops from the drink cans look interesting too. You might eat them. And the polystyrene cups... a whole meal with just one... "Garbage is garbage" (or is it?) ...

A Piece of Litter

A Piece of Litter

A Piece of Litter